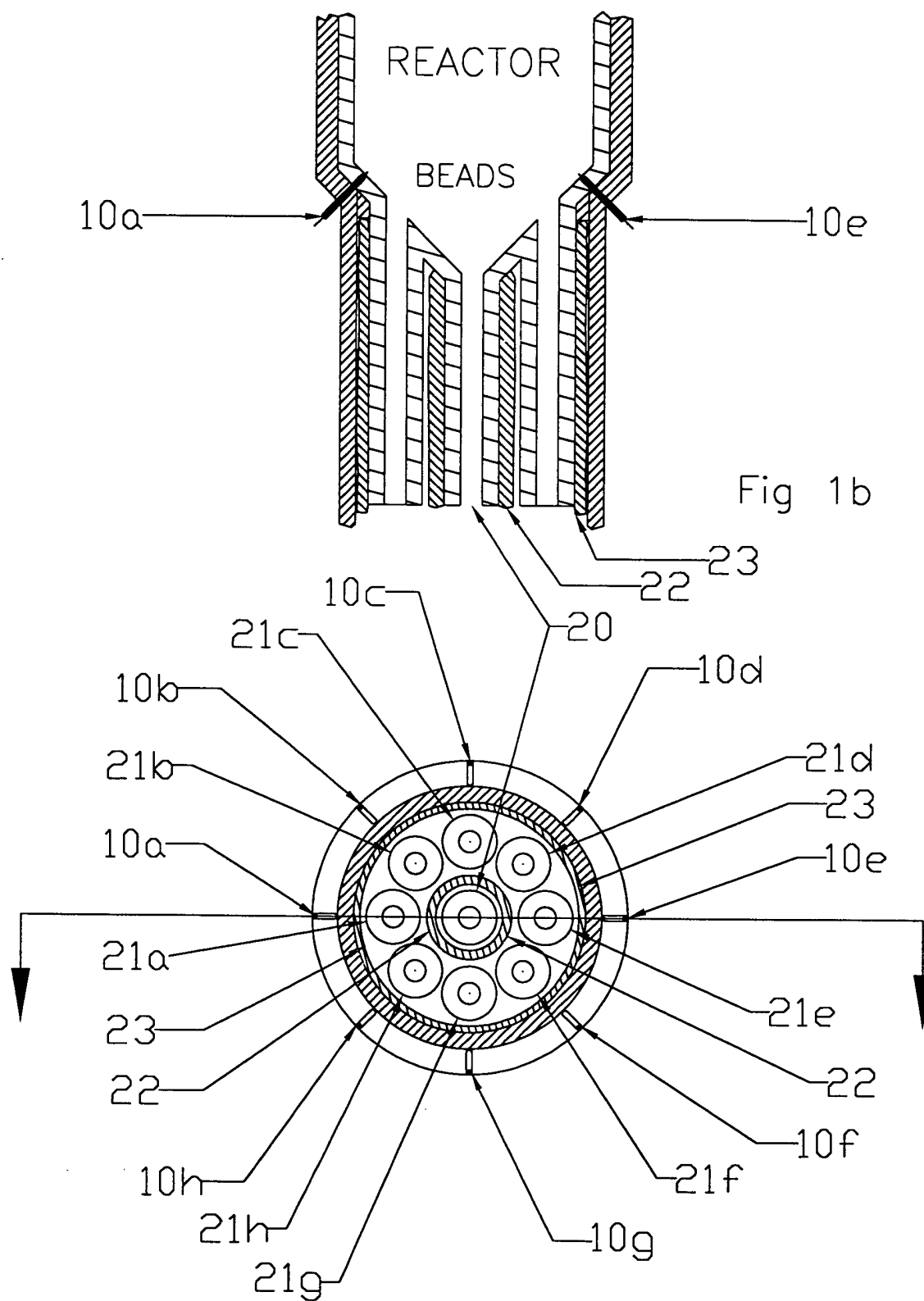


Figure 1a
Single Stage Fluid Bed
Reactor
for any Silicon
Containing Gas (Silane
or Trichlorosilane
and 3 SCG Inlet Coolers
(two of three shown))



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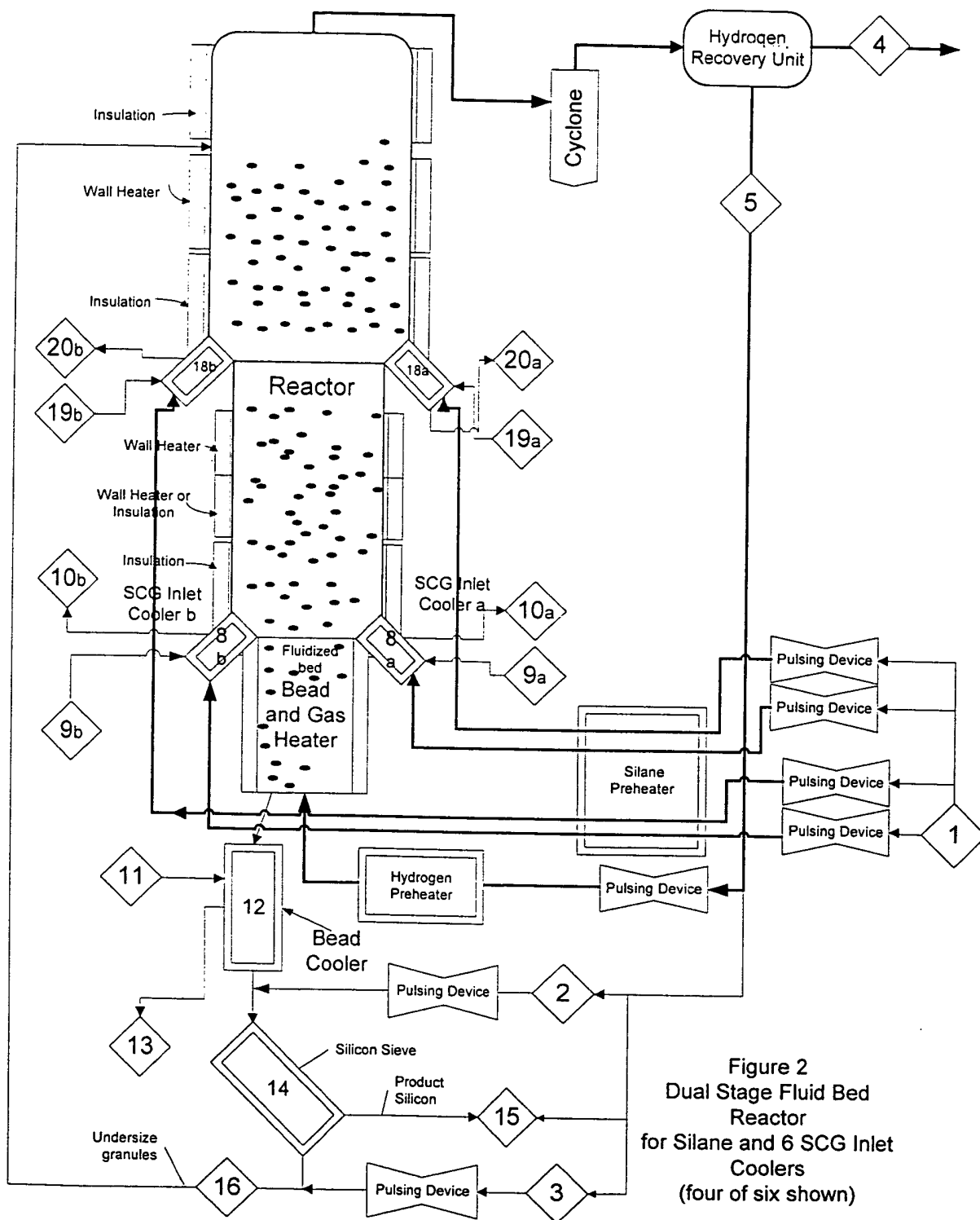


Figure 2
Dual Stage Fluid Bed
Reactor
for Silane and 6 SCG Inlet
Coolers
(four of six shown)

Figure 3a is a detailed process flow diagram for a Dual Stage Fluid Bed Reactor. The reactor is a central vertical vessel containing a fluidized bed of beads and gas. It is surrounded by a wall heater and has two SCG Inlet Coolers (a and b) at the bottom. The reactor is connected to a TCS and DCS Recovery Unit and a Hydrogen Recovery unit. The process involves multiple stages of heating and cooling, with streams labeled 1 through 21. Key components include: Reactor, Wall Heater, SCG Inlet Cooler a and b, Fluidized bed Bead and Gas Heater, Trichlorosilane Preheater, Hydrogen Preheater, Bead Cooler, Silicon Sieve, Product Silicon, Undersize granules, TCS and DCS Recovery Unit, Hydrogen Recovery, Cyclone, and multiple Pulsing Devices. The process is controlled by a TCS and DCS Recovery Unit and a Hydrogen Recovery unit. The flow involves multiple stages of heating and cooling, with streams labeled 1 through 21.

Figure 3a
Dual Stage Fluid Bed
Reactor
for Trichlorosilane, Hydrogen
and 3 SCG Inlet Coolers
(two of three shown)

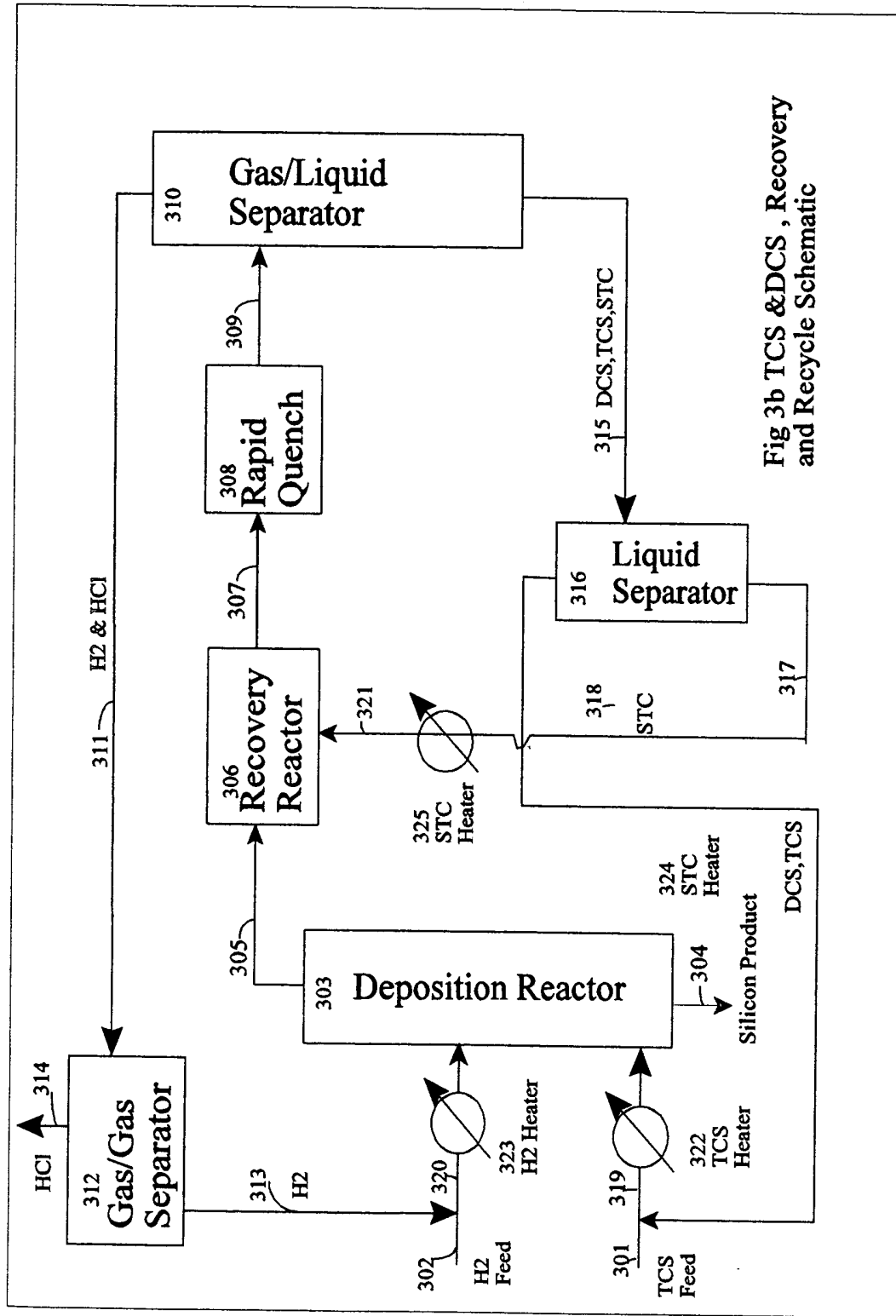


Fig 3b TCS & DCS , Recovery and Recycle Schematic

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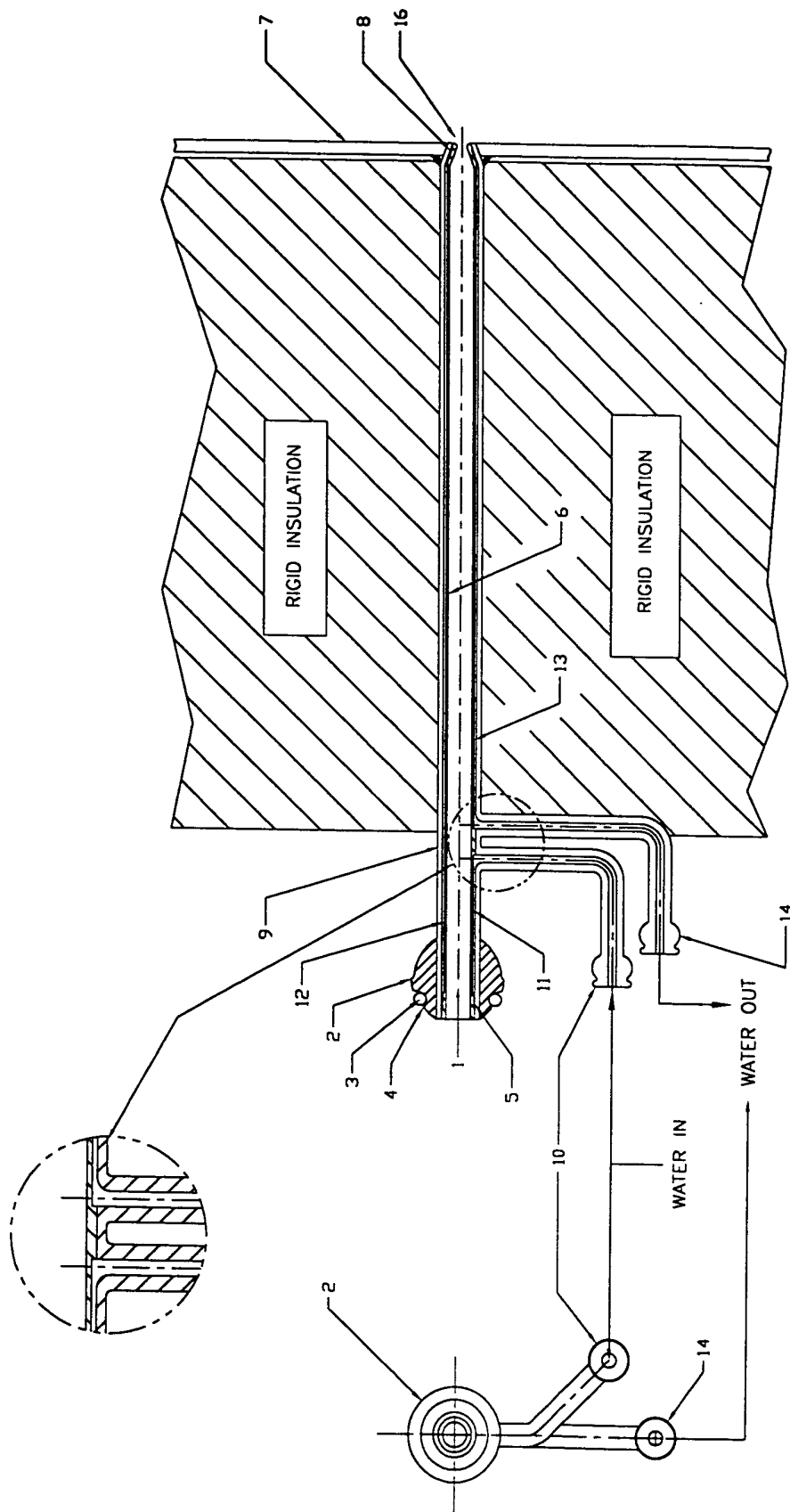
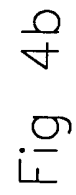
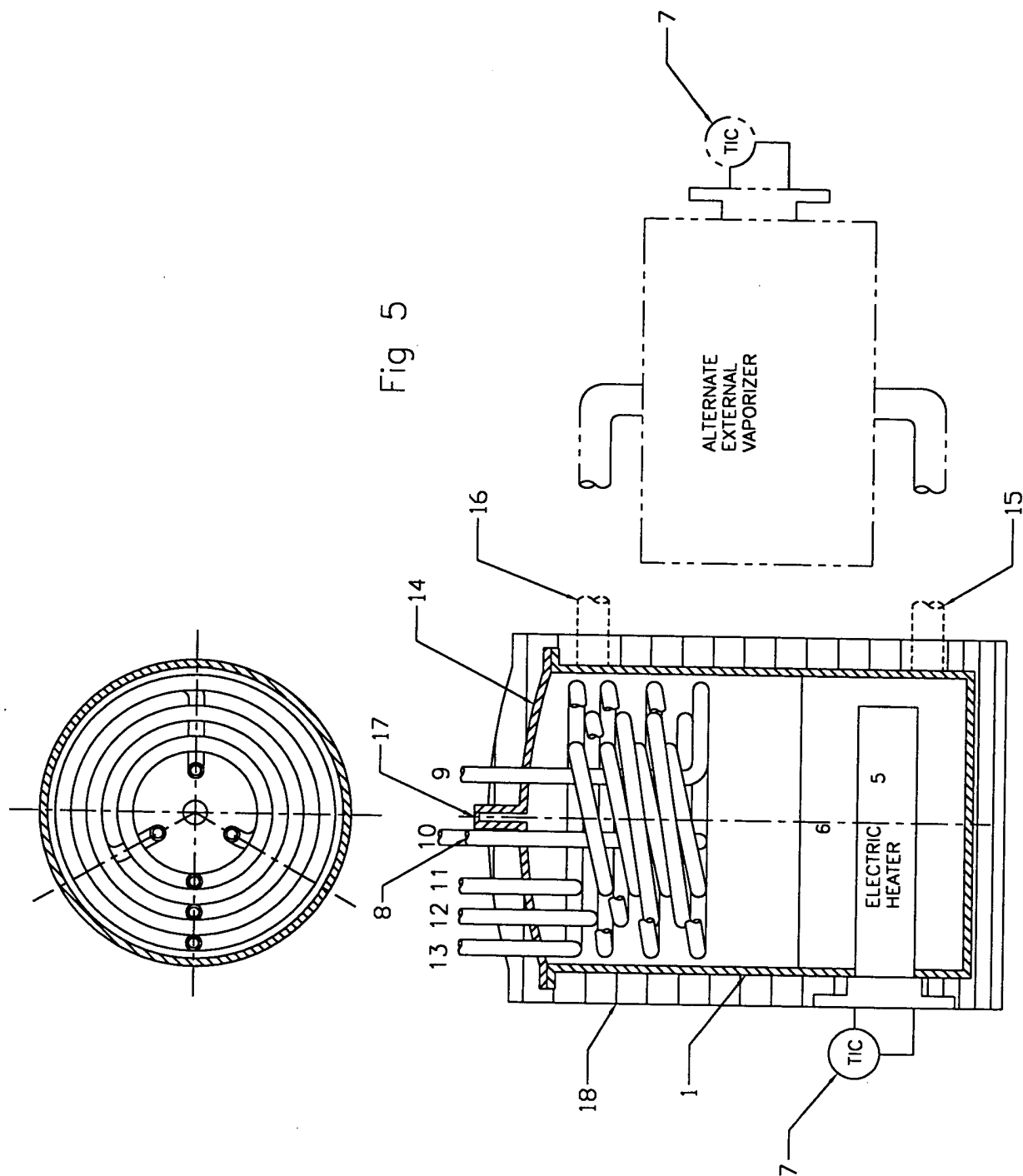


Fig 4a





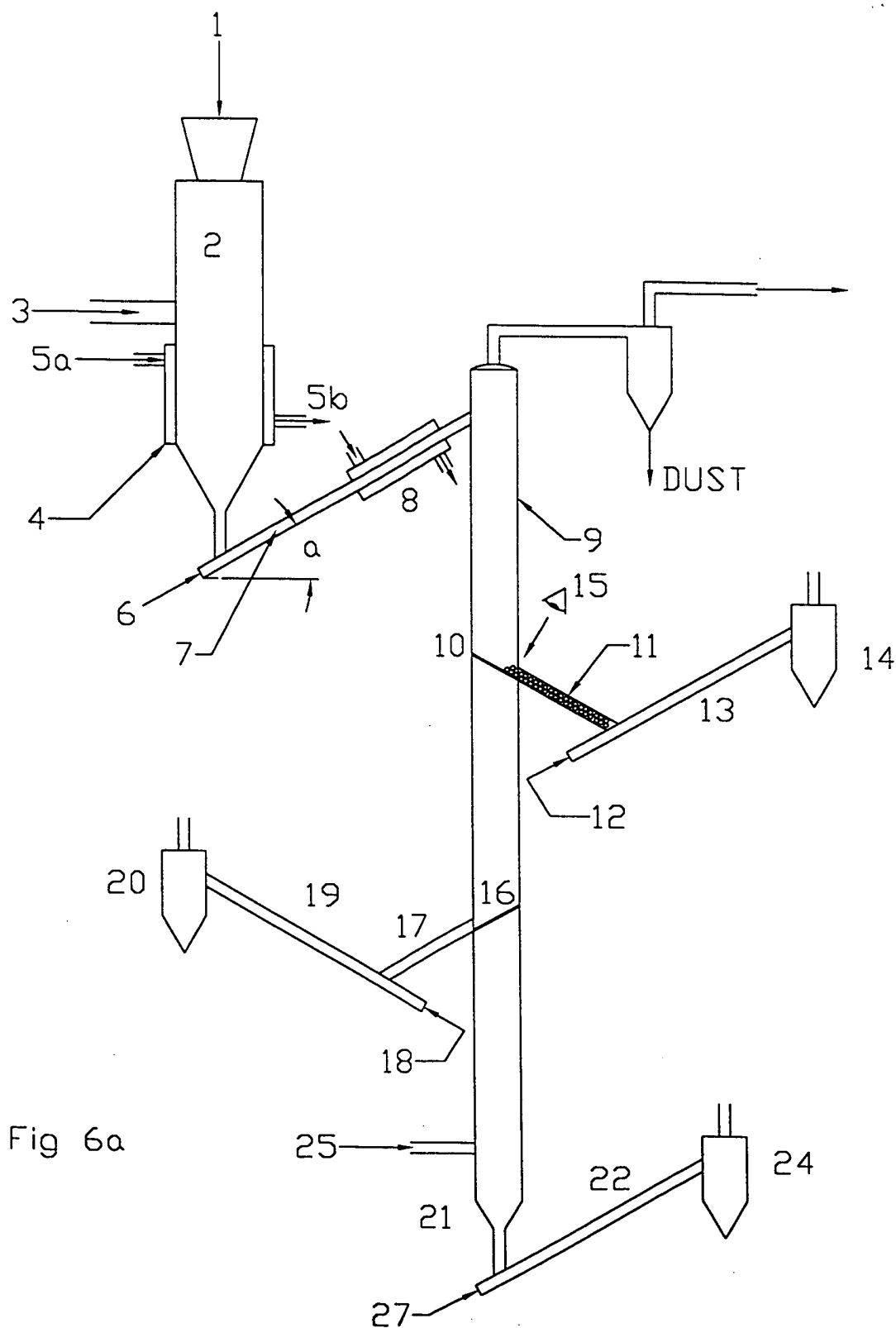


Fig 6a

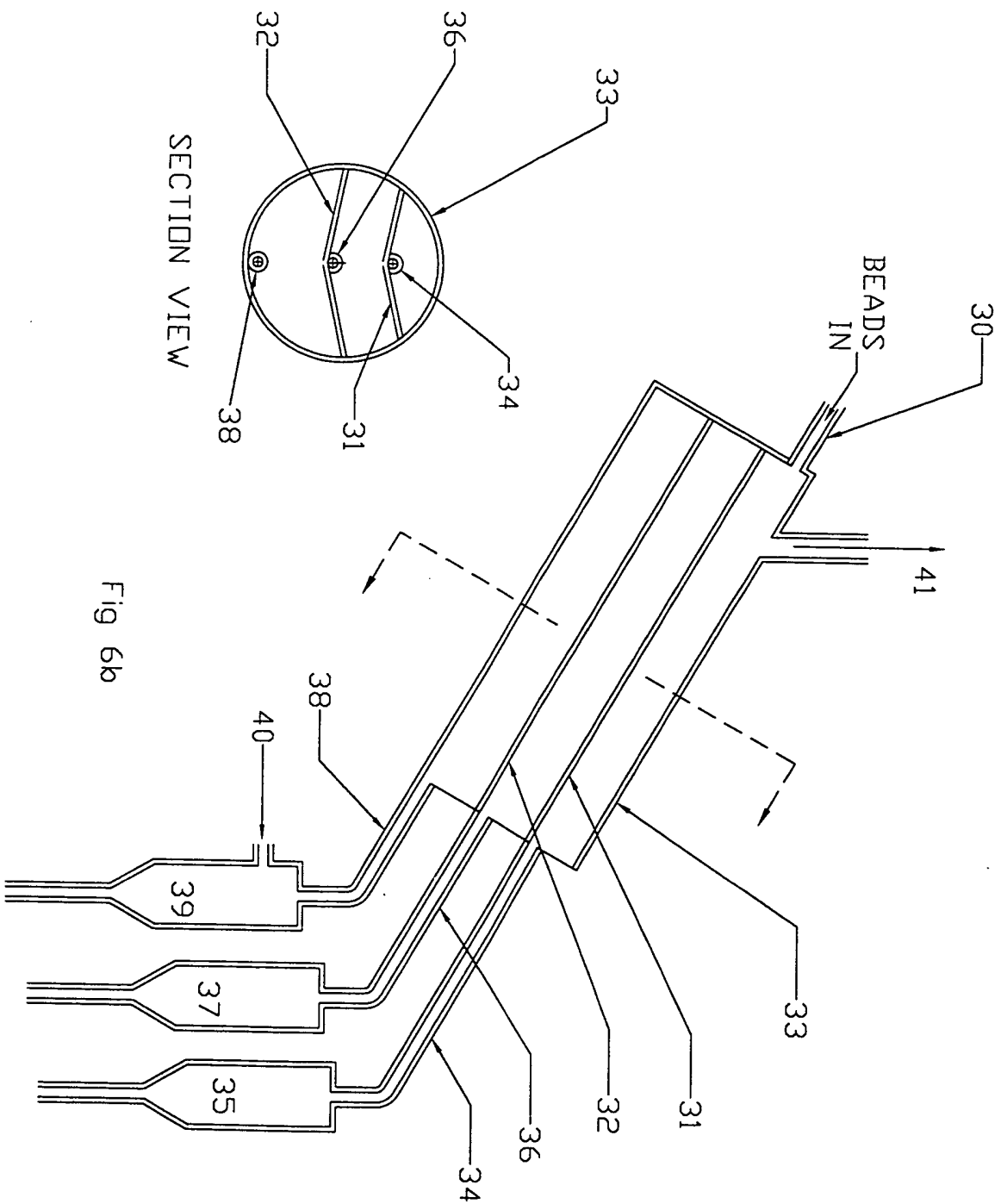


Fig 6b

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